



New Jersey Beach Profile Network

Atlantic County

**Little Egg Inlet
to Great Egg Harbor Inlet**

**NJBPN Profile #'s
134 - 126**

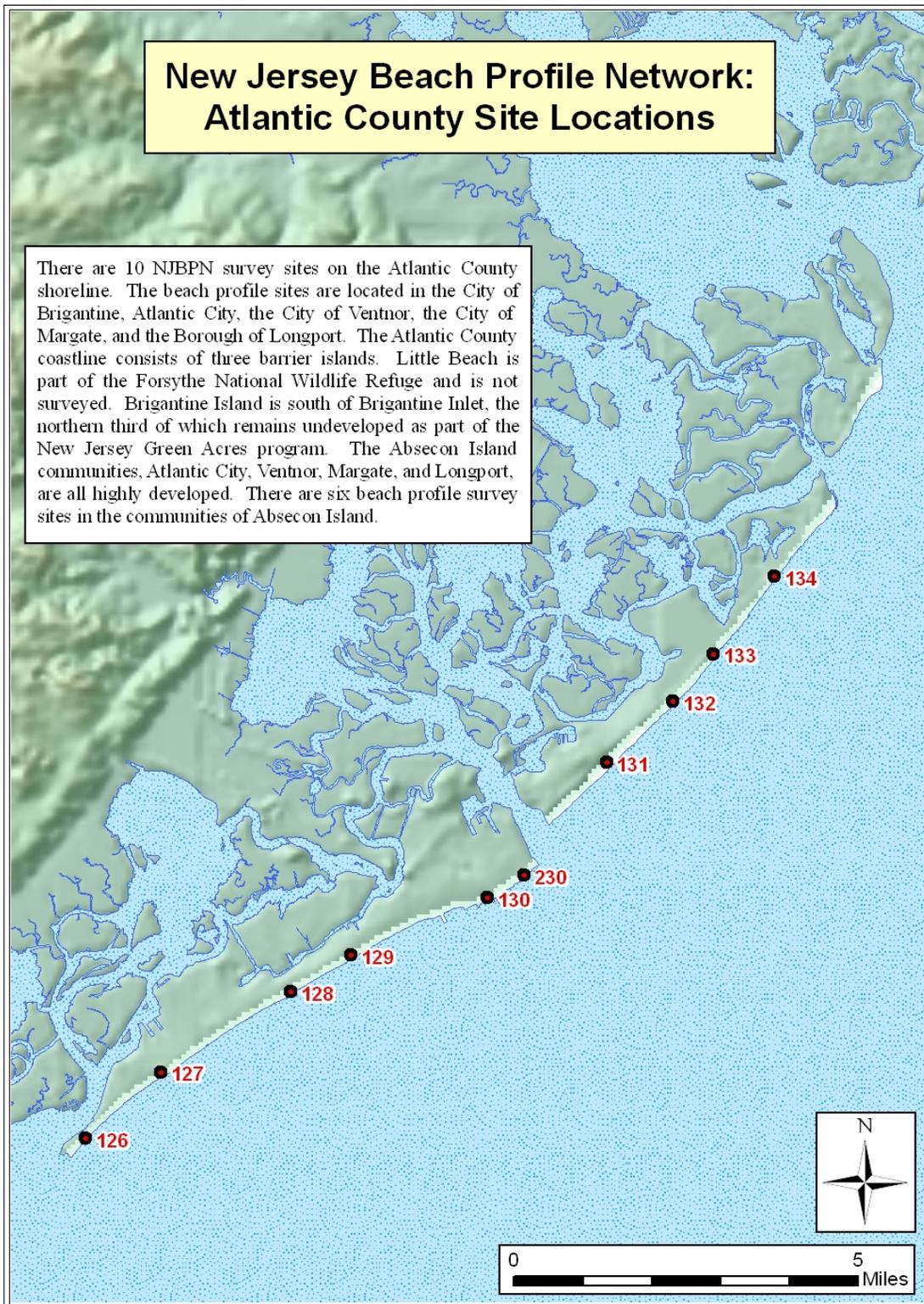


Figure79. Location map for the 10 NJBPN profile sites in Atlantic County, NJ

ATLANTIC COUNTY – SPRING 2009 to FALL 2010

The Atlantic County coastline consists of three barrier islands. Between Little Egg Inlet and Brigantine Inlet the island of Little Beach belongs to the Forsythe National Wildlife Refuge. Brigantine Island is divided into a northern third that is undeveloped and managed by NJ Green Acres Program and the City of Brigantine on the remainder of the island is highly developed. Absecon Island is home to Atlantic City, Ventnor City, Margate City, and the Borough of Longport. The Atlantic County communities have been the direct or indirect beneficiaries of federally sponsored beach nourishment projects as well as having been the sites of multiple NJ State – locally sponsored projects in past years. Sand has been systematically harvested from Brigantine Inlet and Absecon Inlet to substantially add to the beach width, the sand volume on the beach and have enhanced the dune protection for landward properties. The Federal Absecon Island project was completed between fall 2003 and spring 2004 with sand derived from Absecon Inlet. The refusal of Margate City and Longport to participate in the project has resulted in a significant loss of sand from the southern third of Ventnor City beaches through end-effect erosion. Sand is transported south to the areas not initially replenished causing the fill to deteriorate on the southern Ventnor beach. The NJBPN surveys have documented substantial increases in sand volume at Benson Avenue in Margate and a minor increase all the way south at 17th Street in Longport. The Ventnor City profile is located in the middle of the municipal shoreline and has remained stable because it is well north of the project's termination at the border with Margate City. End-effect erosion from fill projects is a significant reason to have continuity of projects across an entire barrier island or between inlets.

As a result of rapid erosion along the northern Absecon Island shoreline, a new site was established at Rhode Island Avenue (Site 230) to provide coverage in this zone of accelerated sand volume loss. After two surveys, this site showed a beach volume loss.

Following the 2009 – 2010 winter storm series, the conditions turned extremely mild with accumulations dominating the summer of 2010. Two hurricanes (Earl and Igor) passed close enough to the NJ coast to generate long period swell waves that acted to move sand from deeper seaward into the range of depths where normal wave transport could move it onto the beach. The erosion at the north end of Absecon Island was not restored in any meaningful way since there was no new sand arriving from Absecon Inlet. The dune system was eroded away leaving the as yet un-finished Revel Entertainment casino project standing just west of the boardwalk and a very narrow beach. The concern over this situation prompted the ACOE to allocate resources to construct a fill maintenance project in 2011. Additional funds were added to the project in 2011 to permit a substantial quantity of sand to be applied across the portions of the project constructed in 2003. The project is scheduled for the fall with Great Lakes Dredge & Dock, Inc. as the contractor doing the work.

The City of Brigantine received beach sand derived from Brigantine Inlet during 2006 to renourish the erosional area located at the northern end of the development on the island. This area has been the site of three projects in 1997, 2001 and 2006. The first two were NJ State and locally sponsored with the 1997 initial fill amounting to 1,000,000 cubic yards of new sand. Lesser amounts have been added subsequently during maintenance projects, but the segment at the extreme north end of development in the City of Brigantine is a continuing zone of instability. Sand moves south toward the north jetty at Absecon Inlet creating a massive beach seaward of the development at the 43rd Street profile site. The loss of sand to the north has been a direct benefit to the City beaches to the south. Last year the sand volume added to the southern mile of beach was over 30 cu yds/ft of shoreline. The process slowed down following the March 2010 northeast storm, but still more sand arrived at sSite 131.

A minor situation continued to improve along the Absecon Inlet side of the north jetty. Immediately following the extraction of over 600,000 cubic yards of sand from a section of the borrow zone delineated by the ACOE that was positioned about 400 feet from the north jetty within the inlet, the dry sand shoreline at the jetty

margin vanished into the inlet. This left development on the land-side of the jetty vulnerable to southeast wave damage. Sand moving south to the inlet has migrated around the tip of the north jetty and is in the process of restoring a sandy margin to the inlet channel. The proposed maintenance project will not be taking sand from this section of the borrow zone again.

TREND ANALYSES AND SUMMARY:

Selected locations were chosen to review trends in shoreline changes for Atlantic County. The trend analysis for Site 132 at 15th Street in Brigantine shows gains in sand volume as sand from the nourished area has moved south to this location. North Carolina Avenue, in Atlantic City (Site 130), continues to lose sediment that was placed on the beaches in 2004 in a federally-funded nourishment project. The federal project however has contributed to beach stability at Site 129 in Ventnor City. Site 126 in Longport is located close to Great Egg Harbor Inlet. This site experiences dramatic reversals in volume gains and losses. County-wide, there were modest gains in sand volume for 2010.

In summary the serious erosion occurring along the northern portion of Absecon Island will soon be addressed by a maintenance fill sponsored by the ACOE. This project will take place in two phases with the initial work in July 2011 being smaller than the more extensive effort scheduled for the fall. Nearly a million cubic yards of sand are expected to be placed in Atlantic City and Ventnor City in 2011. Fortunately, the winter of 2010 – 2011 was exceptionally mild with just a couple of minor NE storms all winter.

24- Year Sand Volume Changes at Site 132, 15th Street, Brigantine

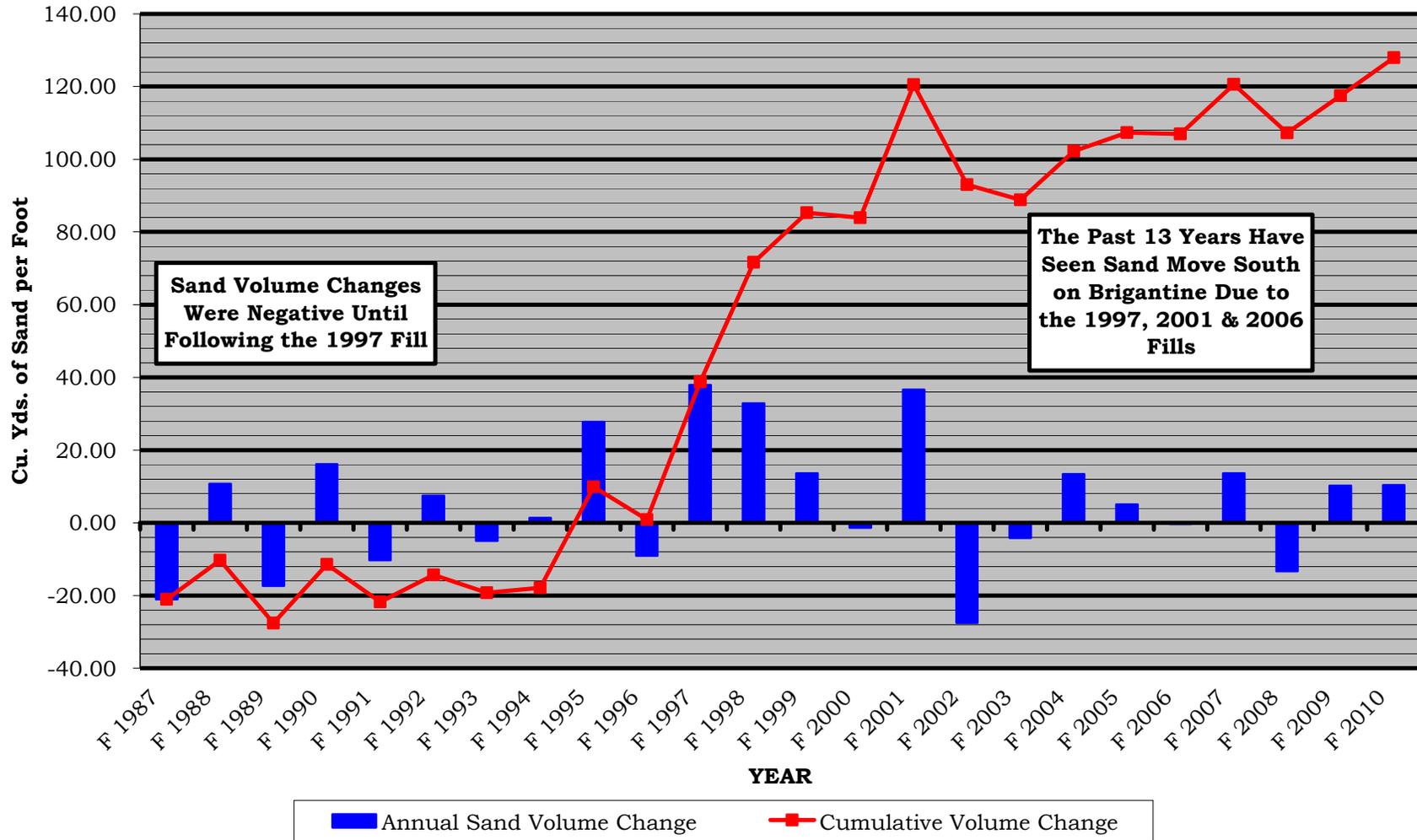


Figure 80. Brigantine Island is about three quarters developed with the northern section preserved in the NJ Green Acres program. Site #132 lies in the center of development and about a mile south of the end of sand placement by the ACOE. The negative sand volume between 1987 and 1996 reflected sediment supply conditions at this location. Sand was pumped onto the northern third of Brigantine three times (1997, 2001 & 2006) and southerly transport transferred over a 130 yds³/ft. to this location since 1997. The Absecon Inlet jetty traps the majority of the sand with some bleeding into the inlet channel margin.

24- Year Sand Volume Changes at Site 130, No. Carolina Ave., Atlantic City

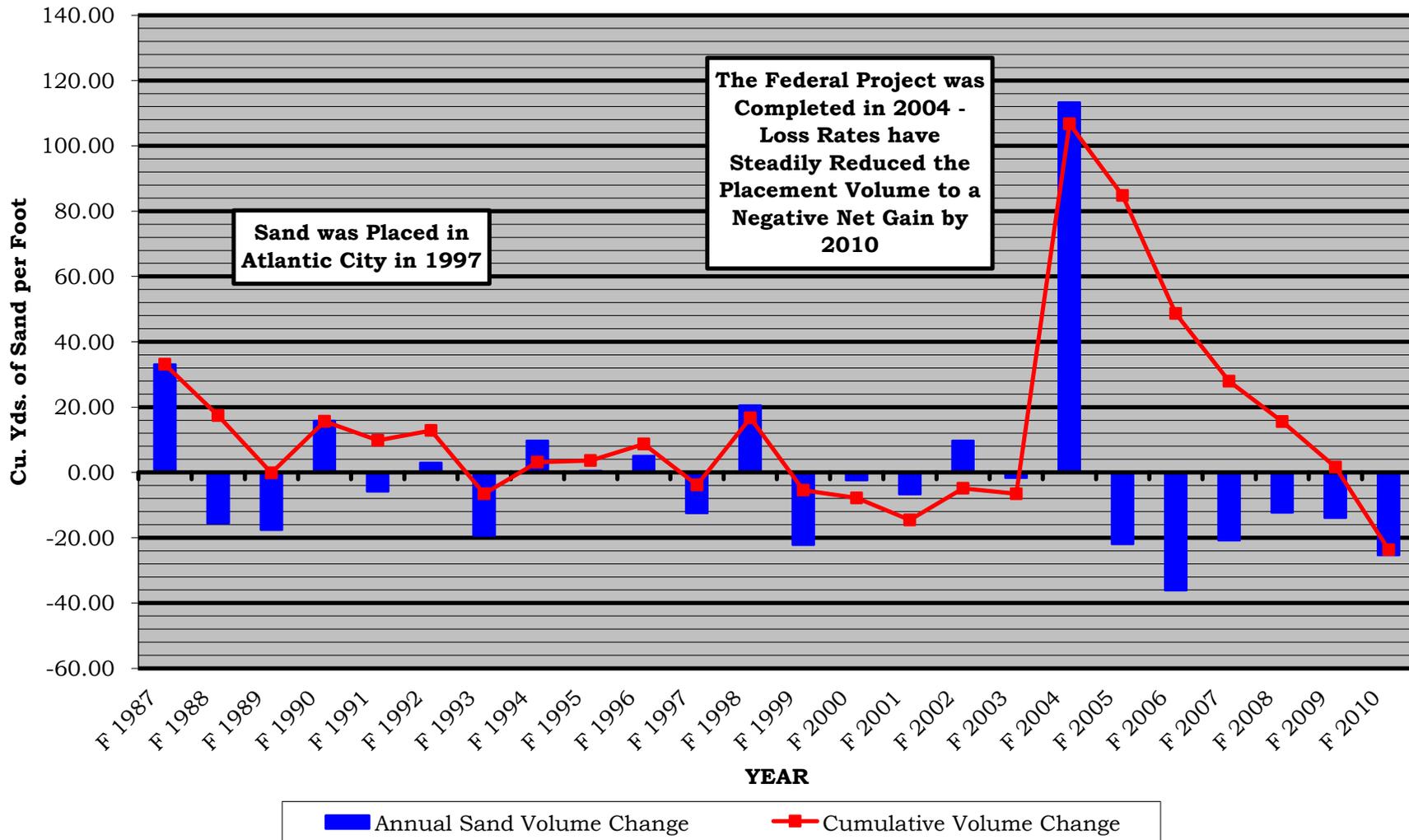


Figure 81. Comparison of the sites at opposite ends of Absecon Island shows the difference in shoreline stability with regard to beach nourishment projects. The placement volume was nearly 120 yds³/ft., but loss rates removed all that material by 2009. The 2010 losses continued leaving the site with less sand than it had on the beach in 1986. The ACOE is about to commence pumping inlet sand onto this section of the Atlantic City shoreline in 2011.

24- Year Sand Volume Changes at Site 129, Raleigh Ave. Ventnor City

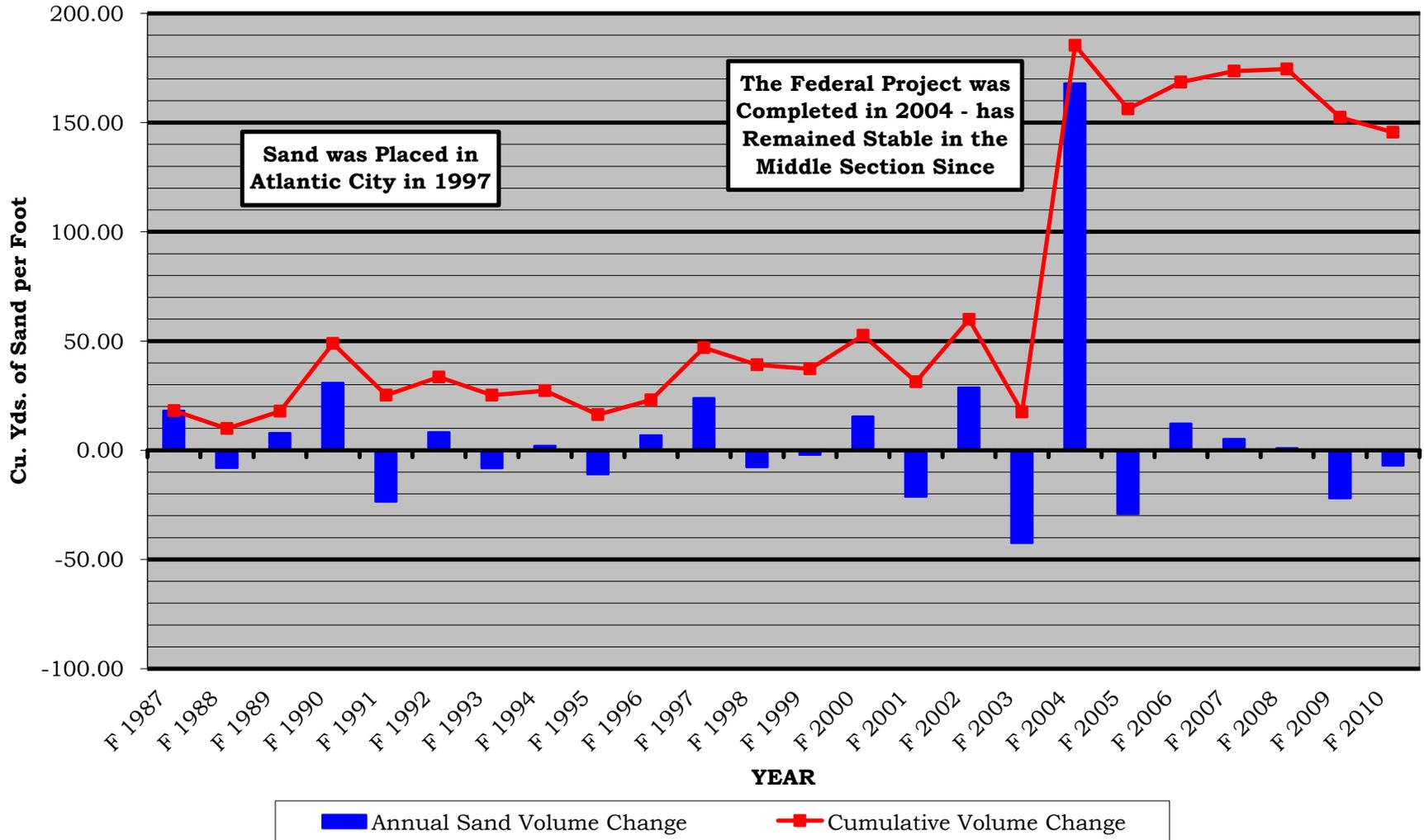


Figure 82. The Raleigh Avenue site is located near the boundary with Atlantic City. Atlantic City pumped sand onto its shoreline in 1984 and again in 1997 prior to the 2003-2004 Federal project. The dramatic gain shows in the 2004 fall survey as a 167 yds³/ft. sand volume placement. Losses since have been minimal at this location near the project’s center. The two communities at the southern end of the island elected not to participate in the project. Six years following the Federal work, this beach has maintained 78.5% of the deposited sand.

24- Year Sand Volume Changes at Site 126, 17th Street, Longport

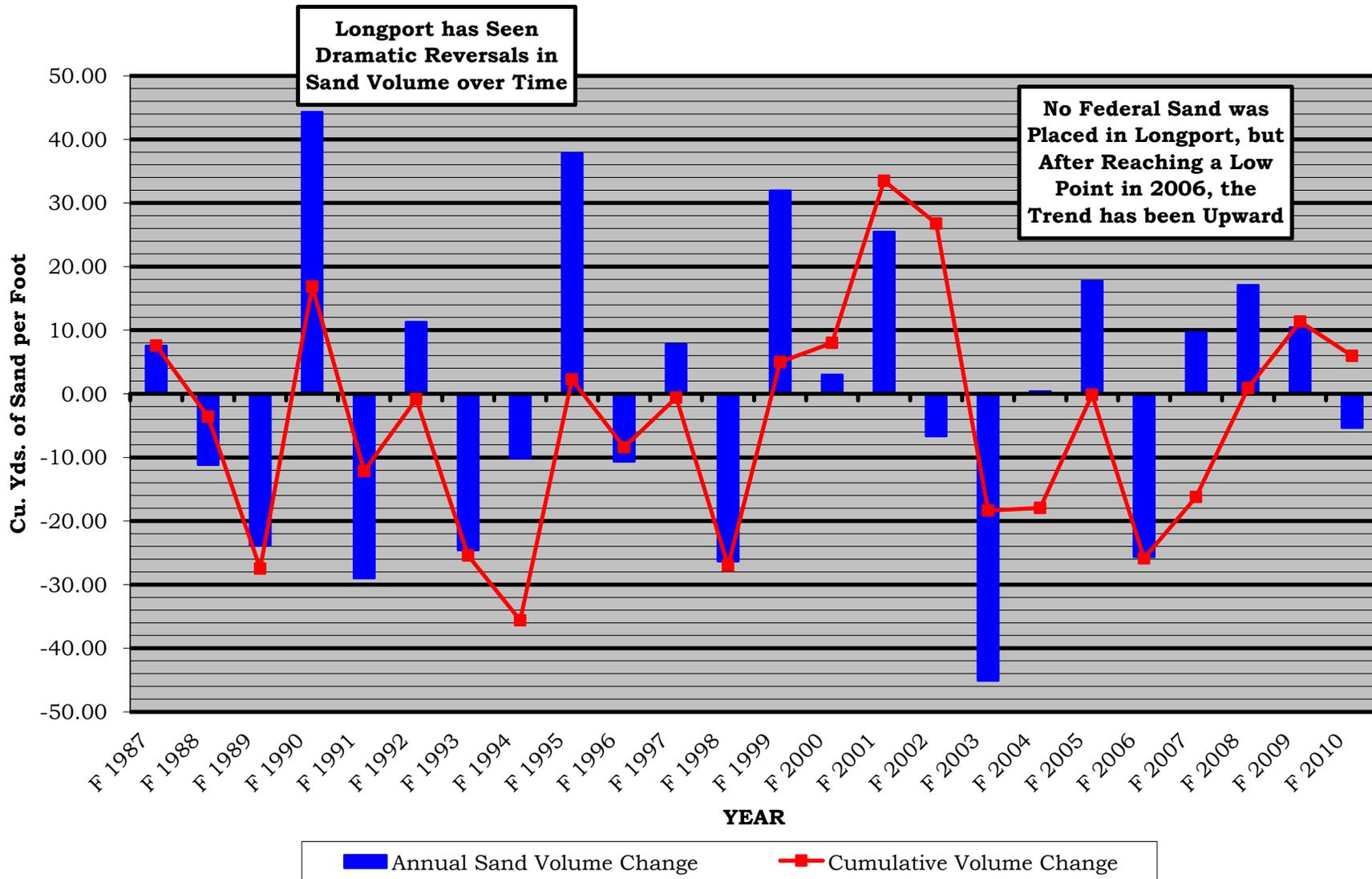


Figure 83. The situation at Longport shows how volatile the southern end of a barrier beach can be on an island with groins, a terminal jetty and a concrete seawall. The 1990 spike was a modest sand placement by the State of NJ; the 1993 loss was the December 1992 storm. The 2003 loss is unexplained, but the three years of modest gains from 2007 to 2009 may be the result of Federal project sand reaching the southern end of the island. This trend reversed in 2010 leaving this site with just 6 cubic yards of sand per foot of shoreline above 1986.

ANNUAL & CUMULATIVE OCEANFRONT SHORELINE SAND VOLUME CHANGES, ATLANTIC COUNTY 1987 to 2010

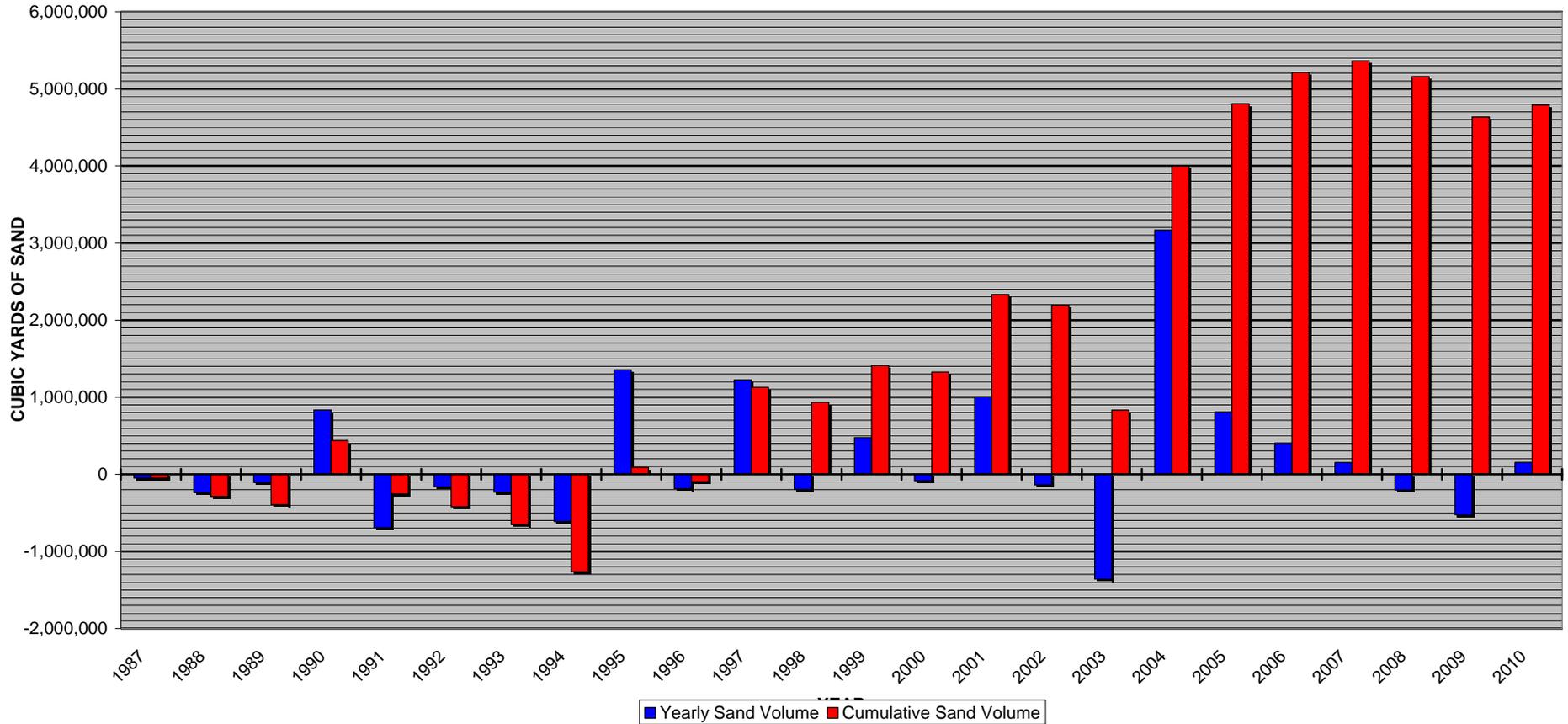


Figure 84. The 24-year countywide average sand volume change data validates the improvements made by the three Brigantine nourishment efforts and the two in Atlantic City, 1997 and 2004 (Federal). The trend between 1987 and 1994 was downward, and then with the major projects starting, the trend reversed into positive territory. 2010 had a modest average gain of 2.22 yds³/ft. reversing two years of average annual losses. The beach nourishment effort has resulted in a 4.79 million cubic yard sand volume increase since 1997.

GREEN ACRES SITE - SITE 134

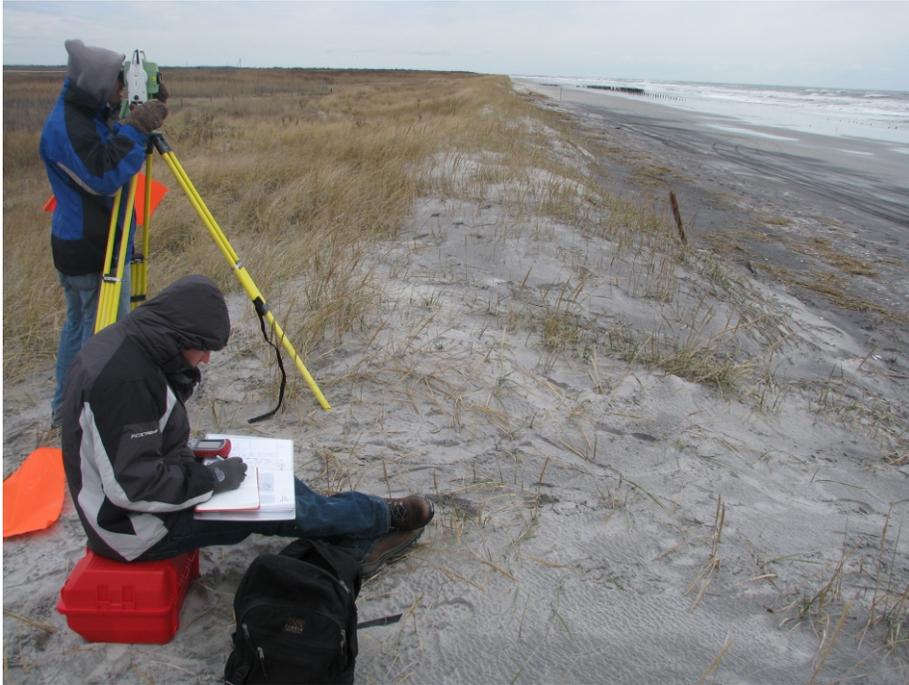


Photo taken December 28, 2009. View to the north.

Located near Brigantine Inlet on the undeveloped segment of Brigantine Island, this site has been monitored since the fall of 1971 when Stockton conducted its initial semester of courses.

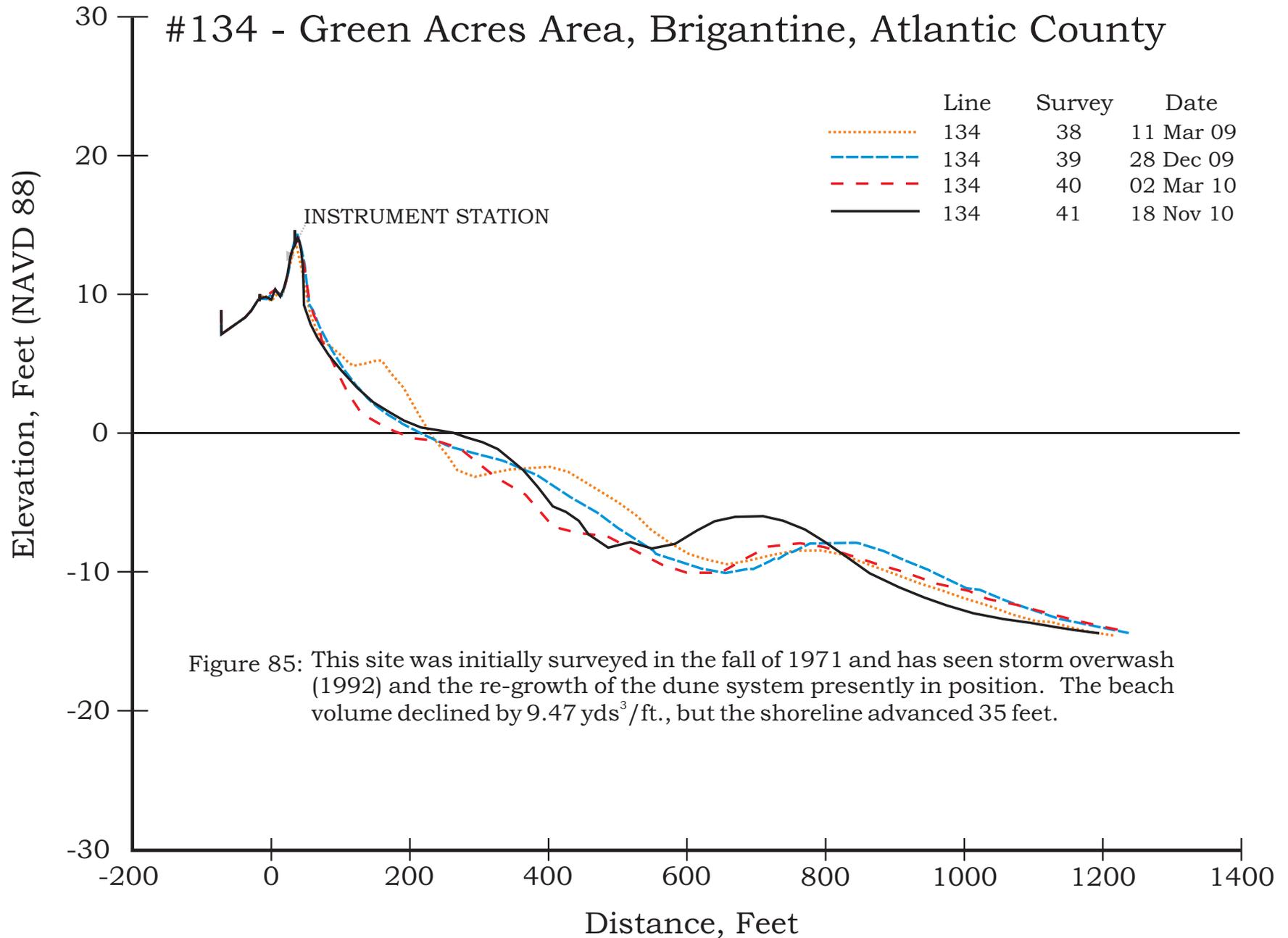


Photo taken November 18, 2010. View to the north.

Comparing the profiles over the year, the profile location lost volume (-3.75 cu yd/ft) and the shoreline moved seaward (48.63 ft). During the summer of 2010, the site recovered sediment that was lost during the winter storm season of 2009-2010.

New Jersey Beach Profile Network

#134 - Green Acres Area, Brigantine, Atlantic County



4th STREET NORTH, BRIGANTINE - SITE 133



Photo taken December 28, 2009. View to the north.

The 4th Street North site is located near the northern limit of development on Brigantine and at the southern edge of the 1997/2001 beach restoration projects. The ACOE fill of 2006 included this site and extended 10 blocks to the south. This site benefits from a dominant transport of sand from north to south along this shoreline.

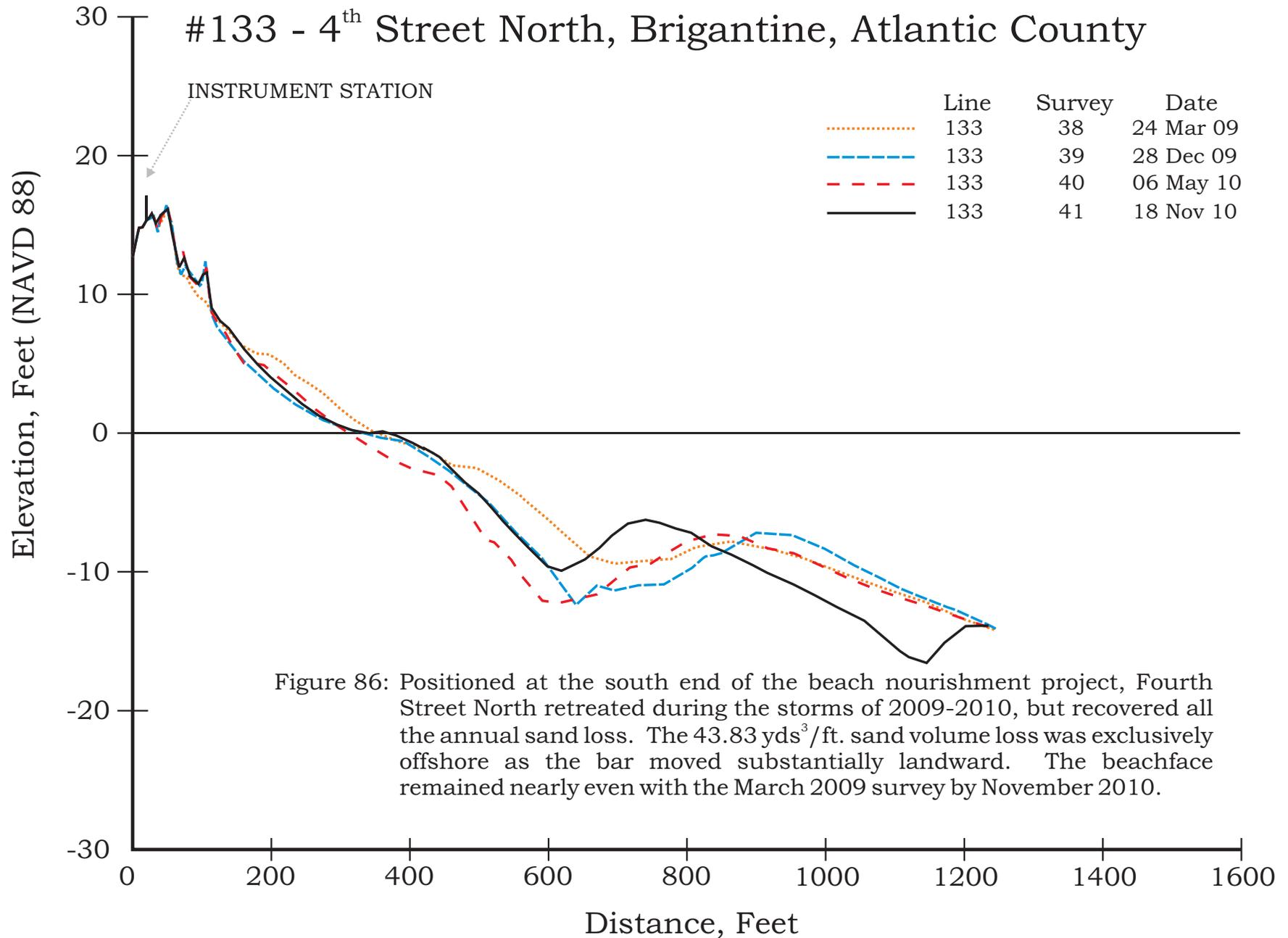


Photo taken November 18, 2010. View to the north.

Comparing the profiles over the one-year time period, the profile location lost volume (-10.51 cu yd/ft) and the shoreline moved seaward (6.25 ft). This site benefitted from cross shore transport of sediment from the nearshore during the summer of 2010.

New Jersey Beach Profile Network

#133 - 4th Street North, Brigantine, Atlantic County



15th STREET SOUTH, BRIGANTINE - SITE 132



Photo taken December 30, 2009. View to the south.

This site is characterized by a wide beach and bulkhead. There is a continuous dune that runs north and south of the immediate profile area. The area continues to receive sand from beaches to the north that were included in the beach fill of 2006.

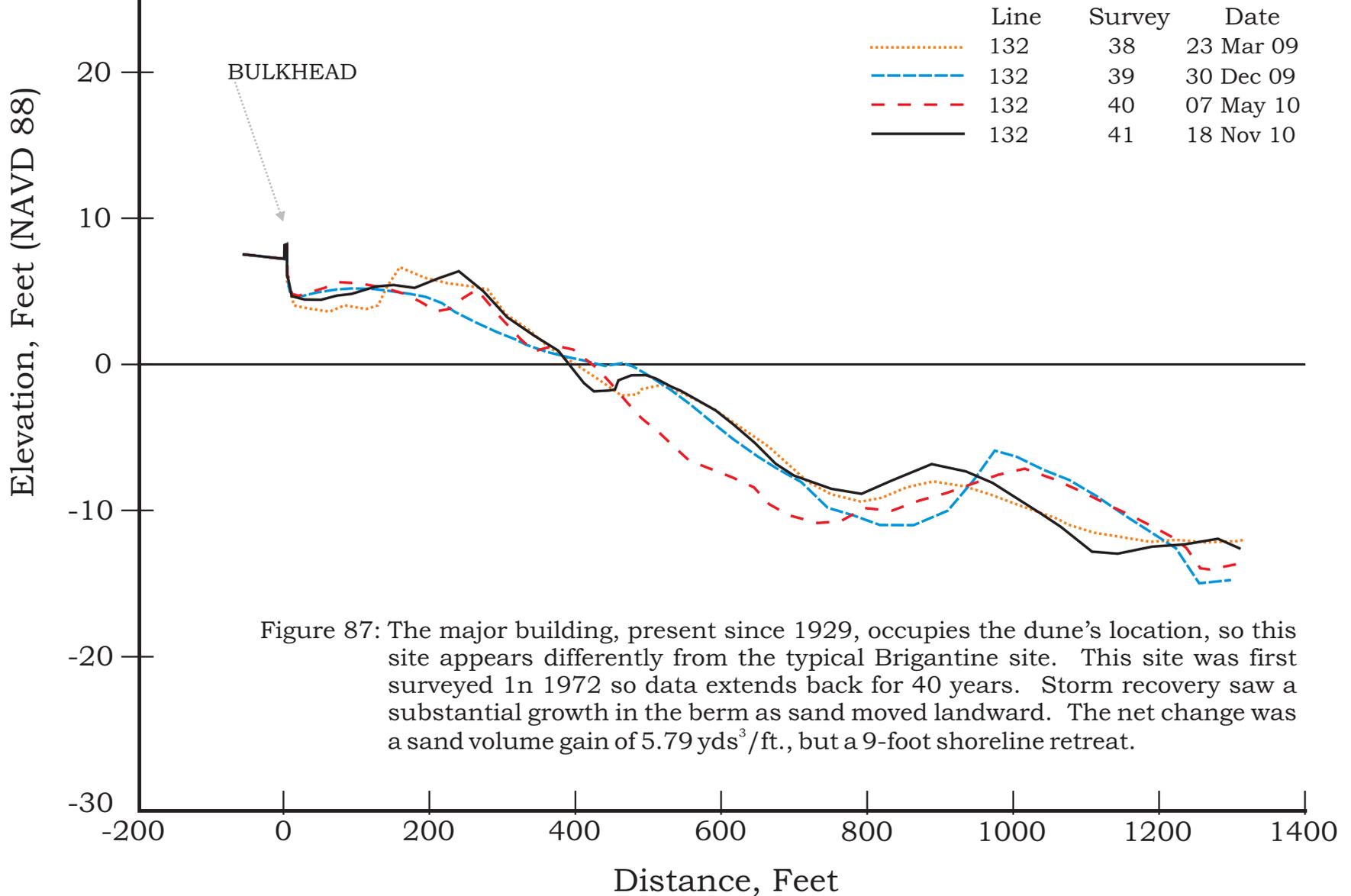


Photo taken November 18, 2010. View to the south.

.Comparing the profiles over the year, the profile location gained volume (10.42 cu yd/ft) and the shoreline moved landward (-41.32 ft).

New Jersey Beach Profile Network

#132 - 15th Street South, Brigantine, Atlantic County



43rd STREET SOUTH, BRIGANTINE - SITE 131



Photo taken December 30, 2009. View to the south.

At 43rd Street South the beach width has become more easily expressed in fractions of a mile between the development and the shoreline. This view shows the wide, dry beach, due to the sediment trapping effect of the north Absecon Inlet jetty.

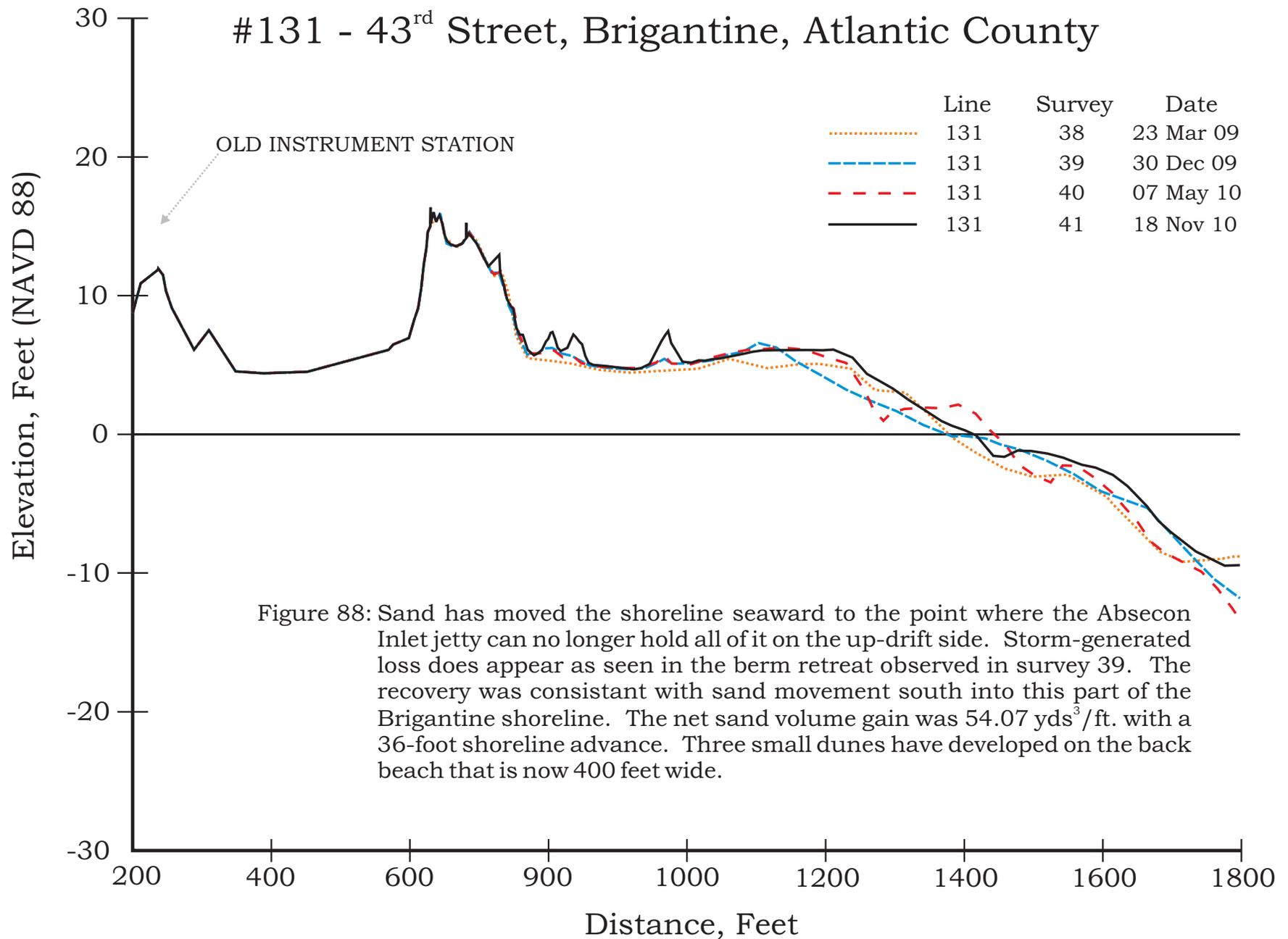


Photo taken November 18, 2010. View to the south.

Comparing the profiles over the year, the profile location gained in volume (42.79 cu yd/ft) and the shoreline moved seaward (38.75 ft).

New Jersey Beach Profile Network

#131 - 43rd Street, Brigantine, Atlantic County



RHODE ISLAND AVENUE, ATLANTIC CITY - SITE 230



Photo taken June 11, 2010. View to the south.

Surveyed for the first time in the spring of 2010, the Rhode Island site is located just north of the Revel Entertainment Casino, currently under construction. At this time there was no dune remaining from the Federal beach project completed in 2004. The Garden Pier to the south was demolished in early 2011.



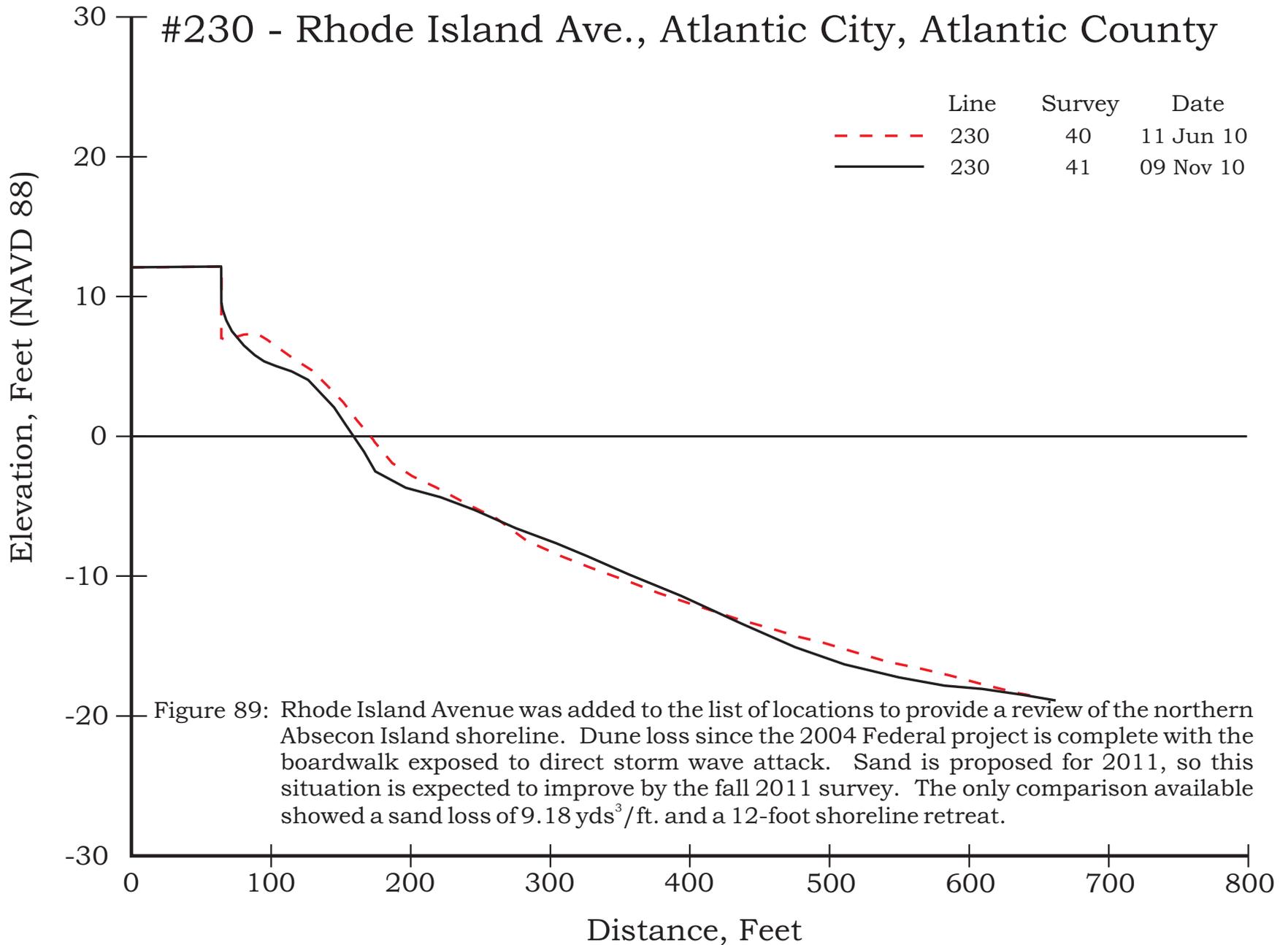
Photo taken November 9, 2010. View to the south.

By the fall of 2010 the beach was flat and fairly narrow. The beach nourishment work commenced during the late spring of 2011 and by the next survey there should be a much wider beach and new dune in front of the boardwalk. With just two surveys the only comparison showed a shoreline retreat of 12 feet and a 9.18 cu yds/ft sand volume loss.

New Jersey Beach Profile Network

#230 - Rhode Island Ave., Atlantic City, Atlantic County

Line	Survey	Date
---	40	11 Jun 10
—	41	09 Nov 10



NORTH CAROLINA AVENUE, ATLANTIC CITY - SITE 130



Photo taken December 10, 2009. View to the north.

This site received sand during the 2002 Federal beach restoration effort. Some recession has been seen in the shoreline position since then, but the worst erosion is further north of the pier.

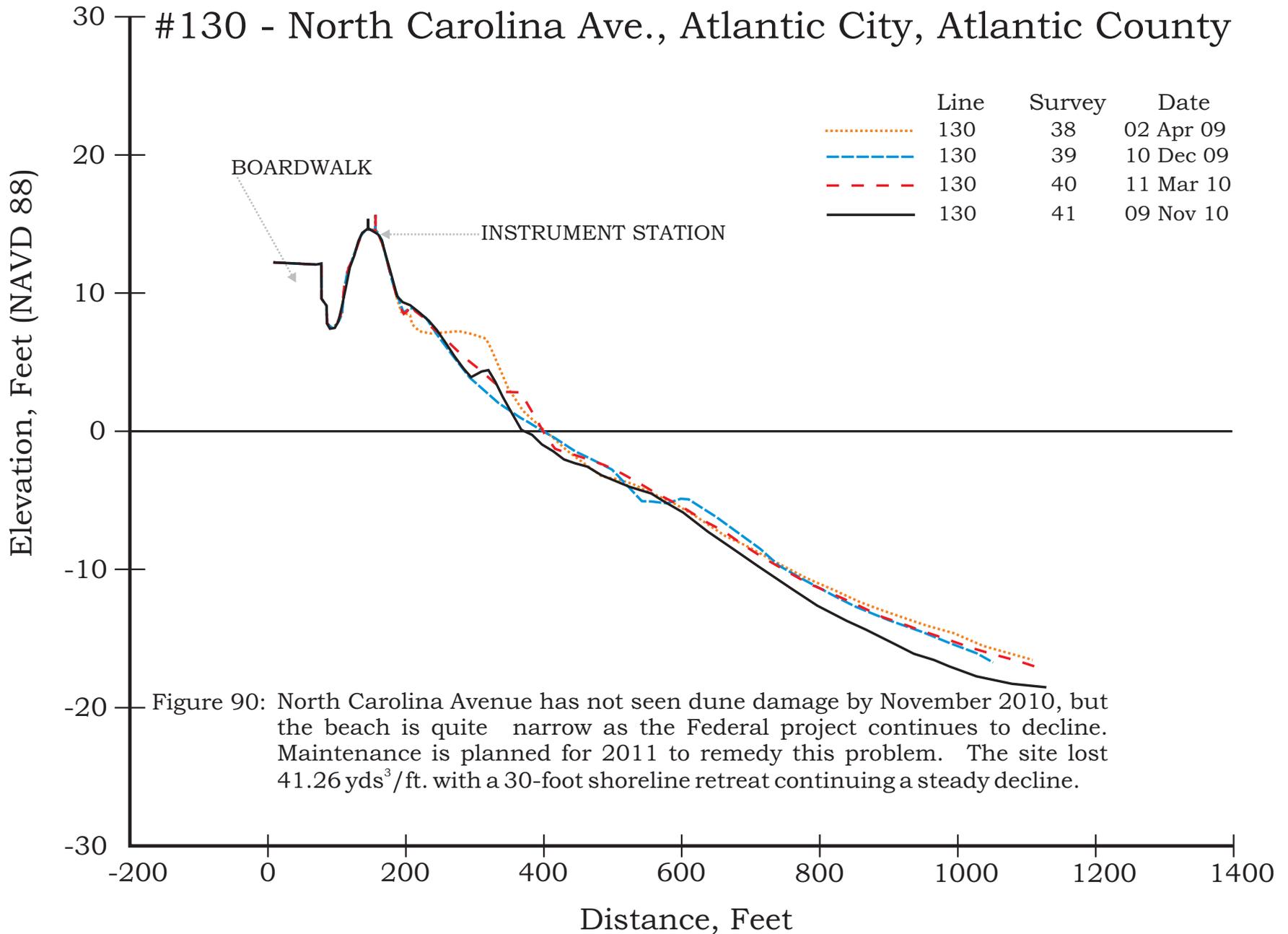


Photo taken November 9, 2010. View to the north.

Comparing the profiles over the year, the profile location lost volume (-25.76 cu yd/ft) and the shoreline moved landward (-27.41 ft).

New Jersey Beach Profile Network

#130 - North Carolina Ave., Atlantic City, Atlantic County



RALEIGH AVENUE, ATLANTIC CITY - SITE 129



Photo taken December 10, 2009. View to the north.

The Raleigh Avenue site received beach material in 2002 and the dune was re-configured wider and higher. The beach width still reflects the 2002-03 ACOE project as sand lost to the south has been compensated by sand moving into this area from further north. This vegetation was planted in the fall of 2007 and has done well.

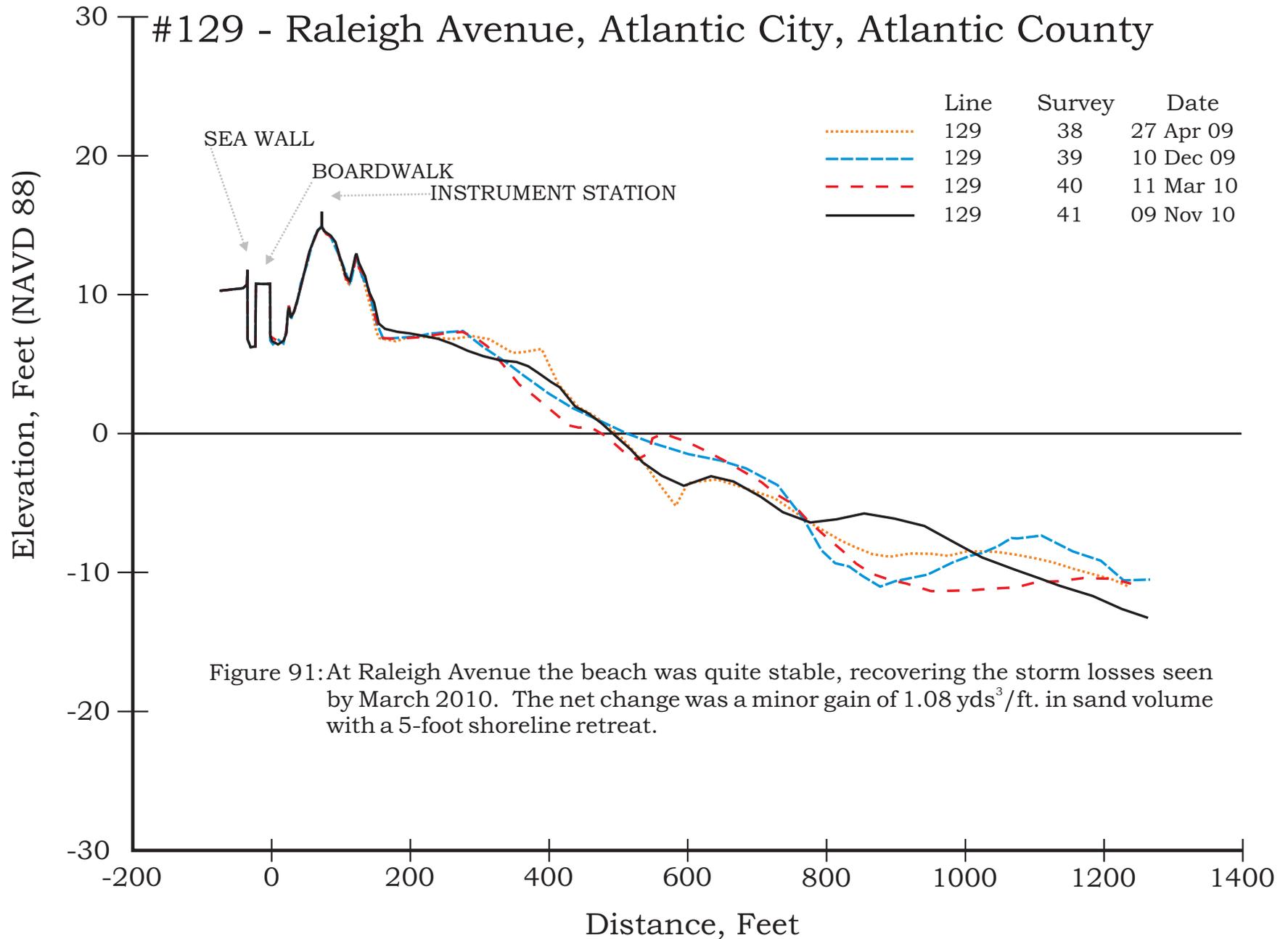


Photo taken November 9, 2010. View to the north.

Comparing the profiles over the year, the profile location lost volume (-6.96 cu yd/ft) and the shoreline moved landward (-20.83 ft).

New Jersey Beach Profile Network

#129 - Raleigh Avenue, Atlantic City, Atlantic County



DORSET AVENUE, VENTNOR - SITE 128



Photo taken December 10, 2009. View to the north.

The Dorset Avenue site was nourished during 2002/03. There was a new dune built and vegetated. The dune was re-established seaward of the original feature which was positioned just seaward of the boardwalk.



Photo taken October 14, 2010. View to the north.

Comparing the profiles over the year, the profile location lost volume (-15.81 cu yd/ft) and the shoreline moved landward (-3.36 ft).

New Jersey Beach Profile Network

#128 - Dorset Avenue, Ventnor, Atlantic County

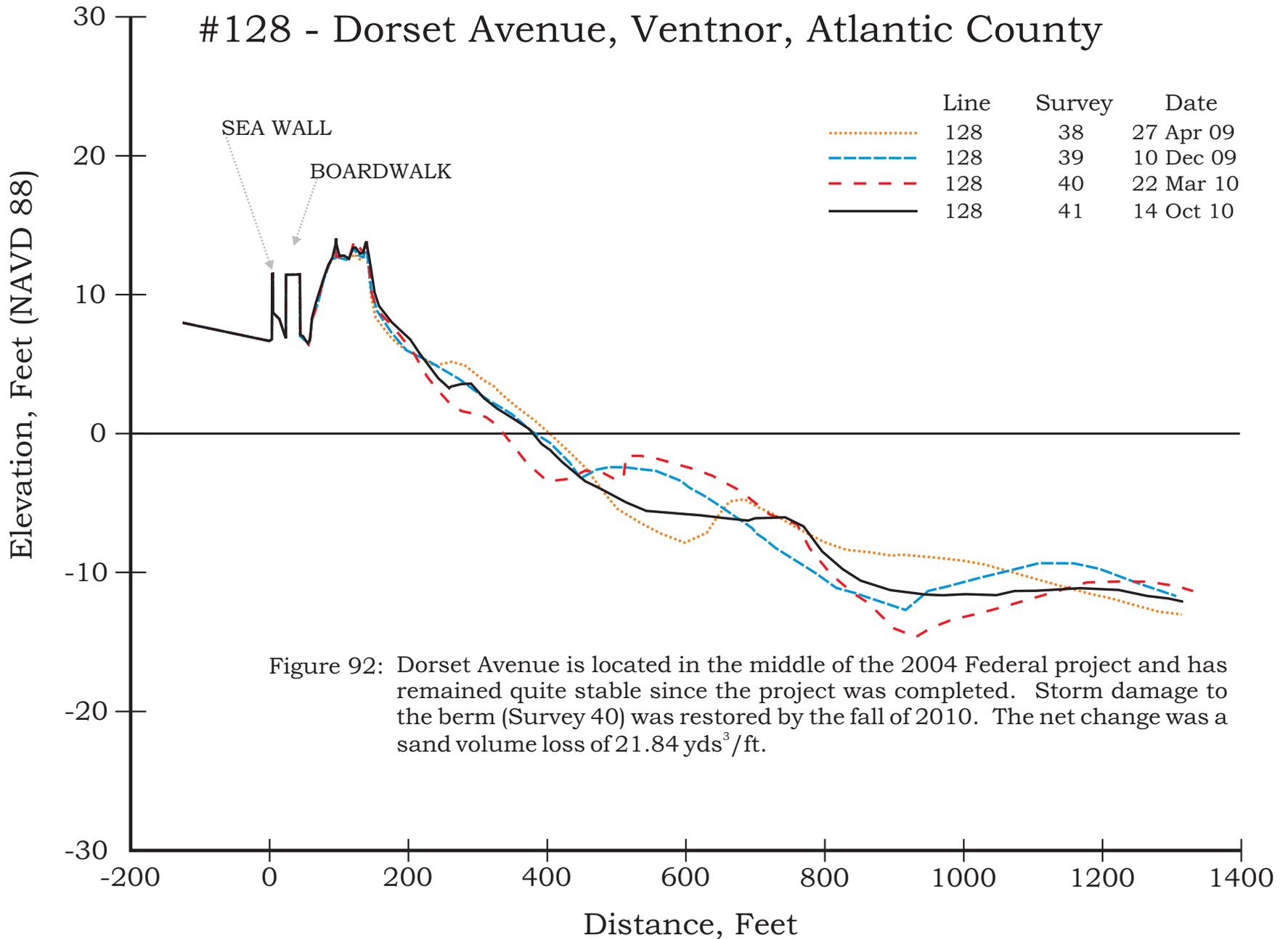


Figure 92: Dorset Avenue is located in the middle of the 2004 Federal project and has remained quite stable since the project was completed. Storm damage to the berm (Survey 40) was restored by the fall of 2010. The net change was a sand volume loss of 21.84 yds³/ft.

BENSON AVENUE, MARGATE - SITE 127



Photo taken December 10, 2009. View to the north.

Benson Avenue in Margate City lies about a mile south of the terminus of the ACOE beach restoration project because neither Margate nor the Borough of Longport chose to participate in the project. This beach has accumulated sand since 2003 and was derived from Ventnor City to the north.

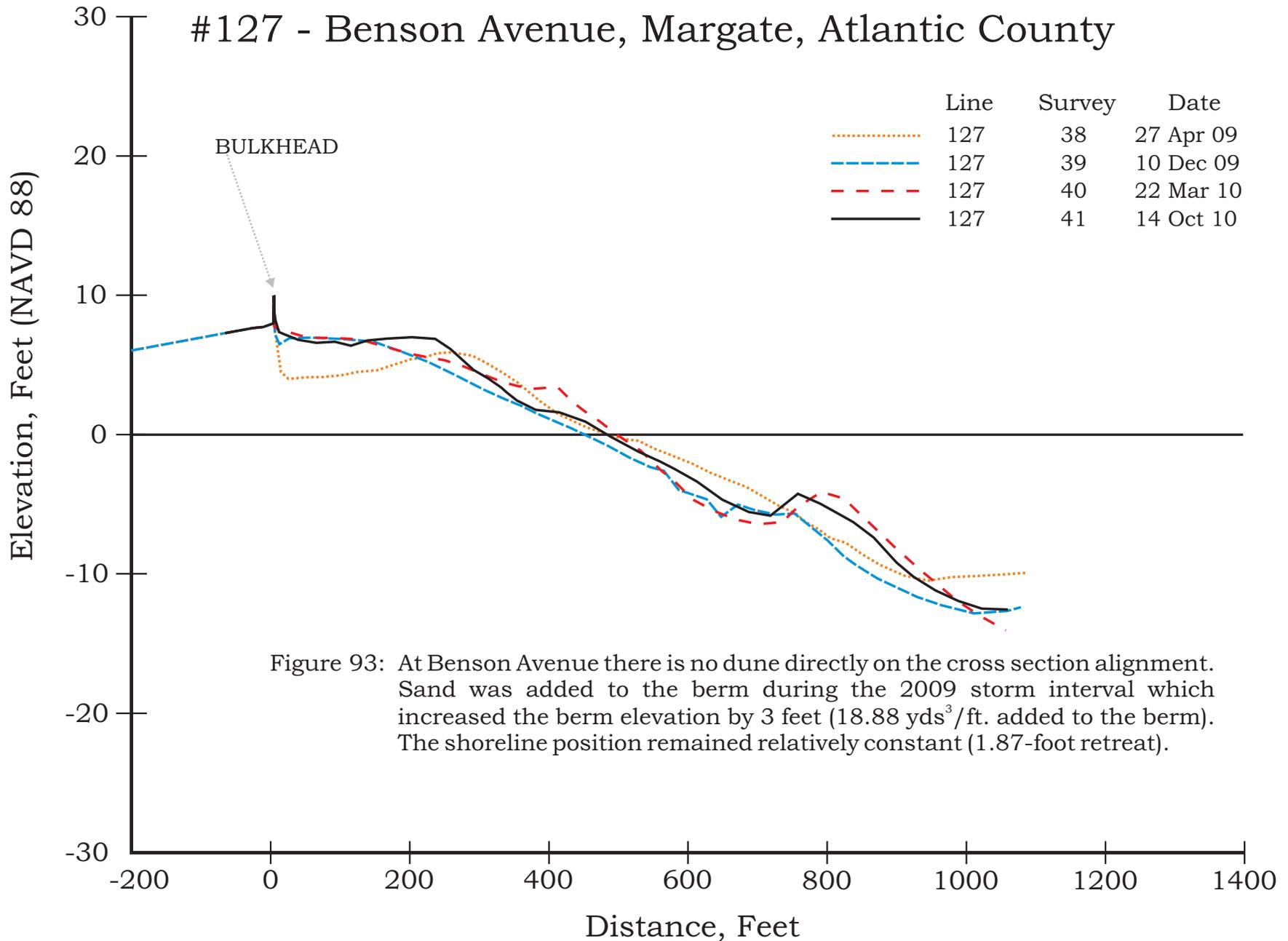


Photo taken October 14, 2010. View to the north.

Comparing the profiles over the year, the profile location gained volume (34.91 cu yd/ft) and the shoreline moved seaward (32.48 ft).

New Jersey Beach Profile Network

#127 - Benson Avenue, Margate, Atlantic County



17th STREET, LONGPORT - SITE 126



Photo taken December 29, 2009 . View to the south.

The Longport site is about 15 blocks from the terminal jetty to Great Egg Inlet at 11th Street. This photograph shows the concrete seawall and armor stone seaward of the wall's base. Insufficient beach width exists to establish a dune along this segment of shoreline.



Photo taken October 14, 2010. View to the south.

Comparing the profiles over the year, the profile location lost volume (-5.36 cu yd/ft) but the shoreline moved seaward (55.74 ft). Most of the volume lost was below 0 ft NAVD88.

New Jersey Beach Profile Network

#126 - 17th Street, Longport, Atlantic County

